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Dr. Hench's Visit

Dr. PHILIP HENCH had to wait seven years—from 1941 to 1948—to vindicate his conviction that there exists in nature an antirheumatic substance "X." In the last fortnight he has been in Britain, telling eager audiences of the swift march of events since he and his colleagues discovered the effect of 'Cortisone' on rheumatoid arthritis. Elsewhere we print in summary one of his lectures. In this, and in his address to the Royal Society of Medicine on Oct. 10, he made it clear that hitherto he has used neither cortisone nor adrenocorticotropic hormone (A.C.T.H.) in routine treatment. Their effects, he insisted, are transient. In acute rheumatic fever, for example, premature withdrawal of the drug may be followed by relapse up to the time when the active stage comes to its natural end. The value of these hormones is likely to be greatest in the self-limiting diseases—notably rheumatic fever—and in some other disorders where, by tiding the patient over a crisis, they may save his life. At the Mayo Clinic cortisone has been found to control inflammatory conditions of the eye, particularly those associated with rheumatic disease; and at the Royal Society of Medicine Dr. HENCH reported that remarkable reduction of symptoms and signs had been observed in uveitis, iritis, and iridocyclitis. In a case of uveitis advantage has been taken of this temporary abatement to operate for concurrent glaucoma.[1]

One surprising development is the discovery that cortisone seems to be effective when given by mouth in doses comparable to those injected parenterally; and trials of oral administration are proceeding at the Mayo Clinic. Growing experience is also bringing growing knowledge of dosage and side-effects. In general, abrupt termination of cortisone treatment is to be abjured; otherwise in rheumatoid arthritis a "rebound" relapse may be evoked. This can be averted by gradually tapering off the dosage or by replacing, towards the end of treatment, cortisone (which inhibits adrenocortical activity) by A.C.T.H. (which stimulates such activity). Among the side-effects singled out by Dr. HENCH for special mention are retention of fluid, impaired carbohydrate tolerance, major changes in the psyche, and spontaneous fractures. When side-effects are troublesome, either hormone might, he suggested, be best given in smaller doses than those which would restore the blood-sedimentation rate to normal or even completely suppress the symptoms.

These substances act, not against the "pathological anatomy," but against the "pathological physiology"; so the earlier they are given the better. In diseases where they are effective, they provide susceptible tissues with a "seal-like buffer" against the attacking irritant. "They do not put out the fire," Dr. HENCH declared. "They do not act like a carpenter who repairs the damage after the fire. But they do provide an asbestos suit." How they act is still unknown, but this much is clear: "We must learn how to coöperate with, rather than dominate and supplant, the pituitary-adrenocortical mechanisms."

1. See Henderson, J. W. *Proc. Mayo Clin.* 1950, **25**, 490; and *Lancet*, Sept. 23, 1950, p. 406.

Annotations

GENERAL PRACTICE AND THE R.S.M.

ON Nov. 22 the Royal Society of Medicine is to launch an enterprise of unusual interest: its section of general practice will meet for the first time. Those who petitioned for this new section suggested that its objects should be: (1) to narrow the widening gulf between specialist and practitioner; (2) to provide for the general practitioner "an active link with currently accepted ideas"; and (3) "to keep alive the academic or scientific attitude to medicine and its allied branches which is so readily lost in general practice."

General practice, as its name implies, is not a special branch of medicine but a compounding of all branches, which may be shaped by the practitioner according to his resources and the needs of the patient at home or at work. This is partly acknowledged by the sponsors in their proposal that the section should "provide a focal point for correlating the work of all existing sections. In this respect, therefore, it would not constitute a further subdivision but rather a central link between them all." Whether this link will help or hurt the practitioner will depend on the way in which it is forged; for if speakers from other sections feel impelled to simplify their remarks, they will strengthen the damaging argument of those who would have it that medicine is of two sorts—the one rational, as practised by the specialist in hospital, and the other homespun by the practitioner in the surgery and home. Over quality, therefore, the section should brook no compromise. Where it might well work for compromise is at the meeting-points—which now too often are the friction-points—between the two groups. Whole sessions could profitably be devoted to the clinical notes which pass between practitioner and specialist, to the relation between the practitioner's and the radiologist's and clinical pathologist's work, and to the division of responsibility between hospital and general practice in such disorders as epilepsy, peptic ulcer, and the disabilities of old age. In these discussions each side would at least gain a better grip of the other's circumstances. Indeed, the society's bold lead will have been rewarded if the section achieves only its first aim, by cutting into the mountain of misapprehension which divides the doctor within the hospital from his colleague without.

PLIGHT OF THE TUBERCULOUS

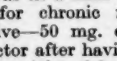
THE B.M.A. Representative Body last month expressed unanimous concern "at the present inadequacy of the measures to deal with the growing problem of tuberculosis." During the meeting Dr. C. O. Stallybrass pointed out that the number of tuberculosis patients awaiting inpatient treatment has grown from 3000 to over 11,000. They may now have to wait anything from three to nine months for a bed, and, if they need thoracic surgery, up to eighteen months. In his view the crisis is due, first, to shortage of nurses. The nurses should be paid adequately and, if they will not work in the country, should be put near towns. No added risk is attached to nursing in sanatoria; the risk arises mainly from the undiagnosed cases in general hospitals. Dr. Stallybrass ascribed the shortage of beds also to the lengthening of the average patient's stay in hospital, because of improved methods of treatment, and to the increase in notifications, especially in Scotland, which is partly a result of better diagnosis; many of the newly recognised cases are in old people. With over emphasis on ascertainment and under-emphasis on treatment, he said, the service is getting out of step. The country has 1·3 beds for tuberculosis per 1000 deaths, but this is not enough; some countries have two or three times as many, in proportion to deaths. Sanatoria should have not waiting lists but waiting beds. Dr. Stallybrass also urged that the preventive work is inadequate and the application of B.C.G. vaccination incomplete. This form of immunisation could probably reduce morbidity to a fifth

and mortality to a seventh among those receiving it, compared with controls. For this work the ratio of tuberculosis-officer hours to population must be raised; in Copenhagen the ratio is three times what it is in Britain. Despite improved means of prevention and cure, we still lack a coördinated scheme for this country, and "we cannot do it on the cheap." Dr. D. S. Robertson contended that almost every case of tuberculous meningitis and miliary tuberculosis results from infection in the home. The patient with open infection who waits at home for a sanatorium bed knows the risk to which his family is being exposed; and when another member of the household becomes infected he will carry his remorse to the grave. The approach to the problem of tuberculosis is permeated with "apathy and a spirit of defeatism." There is urgent need of a nation-wide attack to end "the scandal of a preventable disease flourishing in a civilised community."

HOSPITAL ESTABLISHMENTS

THE Ministry of Health has arranged for expert groups to examine hospital establishments. As reported to the North-West Metropolitan Regional Hospital Board last week, the reviews are to cover the staffs of boards and management committees and the administrative and clerical, medical and dental, nursing, and domestic staffs of the hospitals themselves. Boards and management committees are being invited to associate with the visiting groups any of their members and officers they may wish; and each of these groups, when reporting to the Minister, will put before him the views of the board or committee. The Minister will then decide the establishment; and hospital authorities will be required not to exceed this without first gaining the consent of the Minister in the case of staff appointed by boards, or of the board in the case of staff appointed by management committees.

ANTI-HISTAMINE DRUGS AND THE BLOOD

NO-ONE familiar with the composition of the anti-histamine drugs will be surprised to learn that they can cause toxic reactions in the blood and blood-forming tissues. As early as 1945 Clement and Godlewski [1] reported agranulocytosis in a girl, aged 13½, who had had 3 weeks' treatment for asthma with a drug resembling tripelennamine hydrochloride ('Pyribenzamine'). Since then this complication has been described in four cases after hydrochloride,[2] in one (fatal) after mepyramine,[3] and in one following the administration of metaphenilene hydrochloride ('Diatrin').[4] This last case was in a man of 81 who was given the anti-histamine drug for chronic nasal congestion; the dose was not excessive—50 mg. every 8 hours—but when he attended his doctor after having taken the drug for some 6½ weeks he was pyrexial and had a leucocyte-count of 3600 per c.mm., with no polymorphs, 99% lymphocytes, and 1% monocytes. He was given penicillin, streptomycin, and blood-transfusion, but it was 5 days before any granulocytes appeared in the peripheral blood; eventually he was none the worse for his experience. Drake [4] noted that the anti-histamine drugs that had caused agranulocytosis all contained the benzamine linkage  and he pointed out that this group had been incriminated by Kracke in amidopyrine, which has a reputation for causing agranulocytosis. Some of the anti-histamine drugs, such as diphenhydramine ('Benadryl'), do not contain this dangerous group, and no case of agranulocytosis has so far been reported after their use. However, diphenhydramine has its own dangers; for Crumbley [5] has described three cases of hæmolytic anæmia following its long-continued administration.

Anti-histamine preparations are used for long periods chiefly in the treatment of asthma, hay-fever, and some chronic skin diseases. These reports are a warning; but, considering the widespread use of these drugs, especially in the U.S.A. where they are freely obtainable by the public, serious toxic reactions seem to be rare. In this country anti-histamine substances may be had only on a doctor's prescription—a precaution envied by some American physicians.

1. Clement, R., Godlewski, S. *Bull. Soc. Hôp. Paris*, 1945, **61**, 103.
2. Blanton, W., Owens, M. *J. Amer. med. Ass.* 1947, **134**, 454. Hilkor, A.W. *Ibid*, 1950, 143, 741. Martland, H.S. jun., Guck, J.K. *Ibid*, p. 742. Cahan, A. M., Meilman, E., Jacobson, B. M. *New Engl. J. Med.* 1949, **241**, 865.
3. Roos, G. *Pr. méd.* 1950, **58**, 448.
4. Drake, T. G. *J. Amer. med. Ass.* 1950, **142**, 477.
5. Crumbley, J. J. *Ibid*, **143**, 726.

HORMONES AND PROSTATIC CANCER

ŒSTROGEN therapy of carcinoma of the prostate has been practised for less than a decade. This is too short a time for final assessment of a cancer treatment, but it is long enough for an interim review. Nesbit and Baum[1] describe a five-year trial of œstrogen therapy in 1818 cases at a number of American centres. Some patients were treated with œstrogens alone (in doses equivalent to 1–5 mg. diethylstilbœstrol daily), some by orchidectomy alone, and some by a combination of both methods. Control figures are provided by a series of cases which had no treatment. Judged by survival-rates, hormone therapy was better than no treatment at all; but administered hormones alone were never so effective as orchidectomy alone, and usually the best results were obtained with a combination of the two. In cases without metastases this combined therapy gave a five-year survival-rate of 44%; with orchidectomy alone the percentage was 31, and with œstrogens alone 29; only 10% of the controls survived. The presence of metastases heavily weighted the scales against success; in these cases the corresponding survival percentages were 21, 20, 10, and 6. In the symptomatic treatment of relapse, ringing the changes often brought a measure of success. Here also orchidectomy seemed more effective than administered œstrogens, but the difficulty of assessing and comparing symptoms undermines the value of this conclusion. The results over the whole series vindicate the belief that hormone treatment of prostatic cancer can prolong life.

RADIOTHERAPY OF ANKYLOSING SPONDYLITIS

SUCCESS in the treatment of ankylosing spondylitis depends on early and accurate diagnosis, but the symptoms may be so slight that the doctor is not consulted until years after the onset—even the patient with a completely rigid spine may recall no more than twinges of "rheumatism" or "fibrositis." Then the disease can assume many guises. In a youth with fever and joint pains it is likely to be labelled acute rheumatism; Reiter's syndrome accompanying spondylitis will strongly resemble gonorrhœal urethritis and arthritis; and pain referred to the thorax or abdomen may lead to confusion with cardiac or pulmonary infarction, appendicitis, and the like. It follows that spondylitis should be considered in patients with a wide variety of symptoms, and where it seems a possible diagnosis the examination should include toe-touching with extended knees, chest expansion, and X-ray films of the sacro-iliac joints.

The outlook for these patients may be vastly improved if 'Cortisone,' A.C.T.H., or some effective substitute becomes plentiful, for the disease responds to these drugs as strikingly as does rheumatoid arthritis.[2] Meanwhile, radiotherapy is the mainstay of treatment, and in most cases it will rapidly relieve the pain. The wide-field technique[3] has been largely superseded by heavier dosage to a relatively small area; and though only the sacro-iliac joints are diseased most radiotherapists now treat the whole spine as well, because it almost always becomes involved later. The back is divided into areas which are irradiated separately: the sacro-iliac joints form one area, and the cervical, dorsal, and lumbar spine three or four, according to the patient's build. The precise dosage does not affect the results. At the Rheumatology Unit of the Royal Free Hospital a skin dose of 1200 r at 220 kV. is given to each area in eight treatments spread over four weeks. A rather smaller skin dose is applied to any peripheral joints involved. The patients are admitted to the wards for this treatment, at any rate in the earlier stages, and they receive a high-calorie diet with abundant vitamin and iron, and weekly liver injections. A blood-count is done every week, and a fall in hæmoglobin below 11·0 g. per 100 ml. is an indication for blood-transfusion. Thus the fatiguing and debilitating effects of X-ray treatment are largely avoided. The patient rests and sleeps on a mattress made flat and unyielding by fracture boards. To mobilise the costovertebral joints, he is given exercises which encourage costal breathing, while diaphragmatic movement is discouraged by manual pressure over the epigastrium. The spine is kept extended and kyphosis corrected by the "weight and counterweight" method [4] in which the patient is suspended, face upwards,

1. Nesbit, C. M., Baum, W. C. *J. Amer. med. Ass.* 1950, **143**, 1317.
2. Boland, E. W., Headley, N. E. *J. Amer. med. Ass.* 1949, **141**, 301. Boland, E. W. *Ann. rheum. Dis.* 1950, **9**, 1. Freyberg, R. H. *Bull. N.Y. Acad. Med.* 1950, **26**, 206.
3. Scott, G. Adolescent Spondylitis. London, 1942.
4. Guthrie Smith, O. F. Rehabilitation, Re-education and Remedial Exercises. London, 1943.

from overhead bars by a canvas sling under his dorsal region, and his neck, arms, and legs are supported by spring slings; this arrangement allows him to extend his neck and limbs with the assistance of gravity but against the pull of the springs, which can be varied to suit each case.

The common complications of spondylitis are iritis and respiratory infections. The virus infections can be particularly troublesome, and radiotherapy seems to activate them; here 'Aureomycin' will often be of great value. In women, irradiation of the sacro-iliac joints carries a heavy risk of subsequent sterility, for the usual X-ray dose given to the ovaries to produce an artificial menopause is only 600 r. Even when the hip-joints are treated with X rays there is likely to be at least a temporary amenorrhœa. At the Royal Free Hospital the sacro-iliac joints are never irradiated in women of child-bearing age.

FAILURE AT SHEFFIELD

PLANS were well advanced in Sheffield for turning a modern local-authority clinic into a health centre. But the city council is unable to proceed with these plans because, after lengthy negotiation, the executive council can give no assurance that general medical practitioners will be available to staff the centre. This disappointing and regrettable conclusion sets back the chances of early health-centre experiments in industrial areas. No shortage of money or building materials was the difficulty here; for the clinic building lent itself to inexpensive but adequate adaptation. The opportunity was lost through failure to find ways whereby the doctors already practising nearby could be reconciled to the changes, in their customs and in their relationships with their colleagues, which they feared might follow the implantation of a health centre in their midst.

The Collings report[1] rightly urged that the highest priorities, both medical and economic, should go to improving conditions of medical care and professional life where they are worst—in crowded urban areas. So far this object has been defeated wherever it has been attempted, and for the moment it looks as though the only chance of our generation seeing group practice from health centres is to place them in new towns or on new housing estates and staff them with doctors who have no local interests to reconcile or animosities to forget. But the results of experiments of this kind, made under ideal conditions, would have only limited relevance to practice as it really is. At bottom, improvement in the professional life of practitioners depends on their willingness to coöperate, and the Sheffield decision provides more ammunition for those who hold that real progress will be impossible so long as there is competition for patients.

REMUNERATION DISPUTE

BECAUSE the claim for better remuneration of general practitioners remains unsettled, all such practitioners taking part in the National Health Service are being asked by the British Medical Guild to sign a form of resignation. These forms will not be handed in to executive councils unless 80% of practitioners express willingness to withdraw; and the decision whether or not to attempt this mass withdrawal will be made by the Conference of Local Medical Committees in December, by which time the results may be known of investigations into (1) the total remuneration received by practitioners in the year ended March 31, 1950, and (2) the percentage of income which practitioners pay in expenses. The decision to plan for withdrawal was taken by this conference last June,[2] and was endorsed by the Representative Body of the B.M.A. at its annual meeting.[3] At the latter meeting Dr. S. Wand, chairman of the General Medical Services Committee, declared that the important thing is that the betterment factor (on gross income) should be increased from 40 to 70%—an adjustment estimated to cost about £7 million per annum. If notices of resignation are handed in, the Minister of Labour must be informed that a dispute exists; and he may then refer this to compulsory arbitration.

ON Oct. 11 the fee payable to the General Medical Council for first registration under the Medical Acts was raised to 11 guineas. The council was authorised to increase this fee under the Medical Act, 1950. The fee for the registration of additional qualifications, including diplomas in public health, has not been raised.

1. *Lancet*, 1950, 1, 555.
2. See *Lancet*, July 8, 1950, p. 61.
3. *Ibid*, July 22, 1950, p. 148.

Special Articles

EFFECTS OF CORTISONE IN THE RHEUMATIC DISEASES

DR. HENCH'S LECTURE

ON Oct. 5 Dr. PHILIP HENCH, of the Mayo Clinic, addressed a meeting of the Windsor Medical Society at the Special Unit for Juvenile Rheumatism, Canadian Red Cross Memorial Hospital, Taplow, Bucks. The following is a summary of what he said.

RHEUMATOID ARTHRITIS

Two years ago, at a meeting of the Heberden Society, I spoke of the potential reversibility of rheumatoid arthritis; and now this possibility has been realised by 'Cortisone,' which can cause marked relief of symptoms in a few days in 95% of treated cases. Maximum subjective improvement occurs in up to 8 days, maximum objective improvement in up to 3 weeks, and maximum over-all remission of the disease in all its clinical and biochemical aspects in 2–3 months.

The patients' strength, appetite, body-weight, and mental and physical activity improve rapidly. There is a sense of well-being, sometimes amounting to euphoria. Fever usually disappears. Rheumatoid nodules shrink and may become impalpable. An analysis of flexion contractures shows that 68% disappear in 3–21 days and 32% improve, according to the previous degree of fibrotic change. Even contractures of 2–3 years' standing have completely gone, and physiotherapy may complete a partial cure by cortisone. The responses to second, third, and fourth courses of cortisone are essentially similar. When treatment is discontinued symptoms return in 2–4 weeks, but not in all cases. The over-all results are as follows: disappearance of over 90% of symptoms in 60% of cases, disappearance of 75–90% of symptoms in the rest—except in a very few severe cases where there is only moderate improvement.

There is a parallel reversal of laboratory findings. The sedimentation-rate will become normal if treatment is continued long enough, but it should be noted that with cortisone, though not so much with A.C.T.H., there is up to 9 days' lag before treatment or its withdrawal is reflected in a change in sedimentation-rate. With cortisone and especially with A.C.T.H. the numbers of circulating lymphocytes and eosinophils are reduced, although with long periods of administration of cortisone this effect is decreased. The 17-ketosteroids are increased by A.C.T.H. and reduced by cortisone, while the 11-oxysteroids rise with both. The serum-protein and the hæmoglobin are unaltered. The plasma-electrolyte pattern does not show great changes unless courses of 200 mg. a day, or more, are given for over a week. In such cases the blood-bicarbonate percentage rises and the ionised potassium may fall to between 8 and 14 mg. per 100 ml., whilst the chlorides may fall to less than 550 mg. These changes seem much less common when patients are allowed unrestricted diet. Serial biopsies of synovial membrane show improvement consisting in decrease in the cellular reaction and numbers of plasma cells and lymphocytes and in less fibrin deposition, less necrosis, and less œdema. However, in no case of rheumatoid arthritis so far studied has there been a complete reversal of the histological picture to normal.

RHEUMATIC FEVER

Rheumatic fever and rheumatic carditis present a different problem. One can imagine a hypothesis in which the susceptible rheumatic subject, sensitised by unknown inherited or environmental factors, develops what may be called the "latent rheumatic state." The latent rheumatic state, plus the presence in the body of the unknown irritant produced by the hæmolytic streptococcal infection of the throat, react to give the clinical attack of rheumatic fever. This reaction is in two parts. The first part is exudative, with inflammation, œdema, effusions into synovial cavities, and fever. It is relatively unimportant. The second is proliferative, with cellular infiltration, and later fibrous-tissue formation in the sites of rheumatic nodules and in the connective tissue of the heart and its valves. Unless cortisone can suppress this proliferative reaction as well as the exudative, it is of no more use than aspirin. That it can do so is not proved but probable, for the following reasons. Firstly, the granulation tissue of rheumatic carditis is similar to that producible in experimental animals and to that ofs rheumatoid arthritis both of which are known to be suppressed by cortisone.

Secondly, certain significant cardiac murmurs have been reported by Massel et al. to have disappeared under treatment. And thirdly, in the short follow-up studies so far available, new murmurs indicating fresh carditis have not appeared, and there has been no significant change in established murmurs. But it must be stressed that a much longer follow-up time, 2–3 years, must elapse before judgment can finally be made.

There are good reasons for believing that the average duration of the latent rheumatic state is between 6 and 12 weeks. Under the influence of A.C.T.H. or cortisone the latent rheumatic state and the unknown irritant are still present, though symptomless, for 6–12 weeks. If these hormones are given until the end of the period of the latent rheumatic state, no withdrawal relapse occurs. If the hormones are withdrawn before, then a relapse will occur which will last until the natural end of the latent rheumatic state. It must be emphasised that rheumatic fever is not "cured," the duration of the latent rheumatic state is not shortened, and subsequent recurrences are not prevented by cortisone. The hope for the future lies in giving cortisone to suppress the body's reaction during the latent rheumatic state, and in the oral penicillin chemoprophylaxis of streptococcal infections in susceptible subjects.

OTHER FORMS OF ARTHRITIS

Other forms of arthritis have been treated. Of patients with osteo-arthritis 50% have shown satisfactory responses. Symptoms of acute gouty arthritis are rapidly suppressed, although they may relapse on drug-withdrawal. Chronic gouty arthritis shows little structural change, despite symptomatic improvement; and tuberculous arthritis, though symptomatically relieved, continues to show active tuberculosis and positive culture in biopsy material from the affected joint.

SIDE-EFFECTS

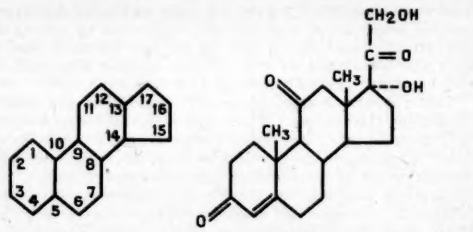
These powerful hormones, if given for long enough may produce undesirable side-effects. Females, especially menopausal or adolescent, show more than males. Side-effects are rare in diseases such as acute gout or acute rheumatic fever controllable by short courses of treatment, but are more common in patients receiving long-continued treatment for chronic disease such as rheumatoid arthritis. The first treated cases of this disease received rather large doses and about 25% showed significant side-effects. In the current series the incidence is about 8%, mainly because lower maintenance doses of about 65 mg. or less daily are used. Minor side-effects such as euphoria and rapid mood swings are common and of little significance. Rounding of the face, œdema of the legs, acne, hypertrichosis, and striæ distensæ occur occasionally but rarely interfere with treatment. Few side-effects present emergencies; most develop slowly and can be detected early by close observation; but a few demand special attention. Excessive salt and water retention may add dangerously to the load on an already failing heart. Patients who are also diabetic show a decreased carbohydrate tolerance and require less insulin. Major psychotic changes have occurred but are rare, and are believed to be due more to a pre-existing psychotic personality than to treatment. Osteoporosis in the elderly, combined with suddenly increased muscular activity, may lead to spontaneous fractures.

SUBSTITUTE FOR CORTISONE

In the hope of finding a drug cheaper, safer, and more easily available than cortisone, over 50 closely related steroids and many adrenal extracts have been tried. None, except compound F, has been found to possess antirheumatic activity in our hands, or in the hands of critical rheumatologists experienced with cortisone. This includes pregnenolone, delta-5 pregnenolone, and desoxycorticosterone with or without ascorbic acid. Several of these compounds differ only in one particular from cortisone. As a result, we can say that the antirheumatic properties depend on:

(1) A ketone group at C 3.
(2) A double bond between C 4 and C 5.
(3) A ketone or hydroxyl group at C 11.
(4) A hydroxyl group at C 17.
(5) A ketone group at C 20.
(6) An hydroxyl group at C 21.

In the absence of an effective substitute for cortisone we must learn to obtain the maximum desirable with the fewest unwanted effects. Some preliminary successes have been obtained in this direction. Rounding of the face, acne, hypertrichosis, and "buffalo hump" can be controlled by 10 mg. of œstrogens per week. Œdema and fluid retention often disappear spontaneously if hormone treatment is continued, but can if necessary be controlled by diuretics, by potassium chloride 6 g. per day, and by a restricted salt and fluid intake. Undue nitrogen loss, less common on unrestricted diets, can be controlled by 25 mg. of testosterone each day. Psychotic manifestations may require temporary interruption of treatment, or, sometimes, stronger measures such as shock therapy. We must learn to coöperate with, rather than dominate or supplant, the functions of the pituitary-adrenal system.



17-hydroxy-11-dehydrocorticosterone (Compound E)

METHODS OF TREATMENT

Various plans of administration have been used. No plan yet emerges as consistently the best. In one plan treatment is given in full doses for short courses of up to 3 weeks which are abruptly begun and abruptly ended, and repeated when symptoms recur. This has the advantage that the physician knows what is happening to the disease process underneath the hormonal suppression, and occasionally a relapse of the disease has not occurerd for many months after treatment ceased. But patients, once freed of their disease, tolerate very poorly even its partial return, and have great difficulty readjusting themselves. A second plan gives fully suppressive doses during a short initial period, followed by maintenance doses gradually reduced to a minimum which prevent recurrence. This saves the patient from the misery of recurrences but is costly and requires close supervision. Even a change in dosage from 50 mg. a day to 100 mg. on alternate days may need careful management. A third plan alternates courses of cortisone with courses of A.C.T.H. In theory this should produce less secondary suppression of the adrenal or pituitary glands.

THE FUTURE

There are many promising new developments under way. Briefly, these are the improved methods of producing cortisone and A.C.T.H.; the development of long-acting A.C.T.H. and the development of A.C.T.H. peptides; the potentiation of cortisone with insulin, the production of radio-actively labelled cortisone and its use in research; the development of compound F (which has as yet not been successfully synthesised); and the studies on oral cortisone.

In conclusion, it should be added that at the Mayo Clinic these hormones are not yet used in routine treatment. But one cannot remain academically aloof to the millions of arthritic patients who ask "Can we get the hormones as a safe treatment; and if so, how soon?" Many investigators believe that these drugs can now be released for practical application in conditions requiring relatively short-term treatment. The price of cortisone has already fallen from 1000 dollars to 50 dollars a gramme, and it is now available in every large American hospital. In the management of chronic diseases, and especially in rheumatoid arthritis, current investigations may reveal the limits of its usefulness. Much remains to be learnt, but a satisfactory beginning has been made through the correlated efforts of many investigators in many branches of science. Whatever the destiny of these hormones in practical therapy, they demonstrate clearly the reversibility of certain disease processes formerly regarded as relentlessly progressive, and in particular they are powerful tools with which we can investigate many problems of ætiology and treatment in a wide variety of diseases.

In England and Wales notifications of poliomyelitis during the week ended Oct. 7 were: paralytic 241 (222), non-paralytic 112 (109); total 353 (331). Figures for the previous week are in parentheses. In the week under review non-paralytic cases formed 23·5% of the total.

From Letters to the Editor

Propagation of the Unfit.—In the lecture published on Sept. 30, Professor Penrose restates his ingenious thesis that our population is largely self-regulating for its genetic endowment for intelligence. The relatively heterozygous individuals of about average intelligence have, he suggests, a naturally higher fertility than the more homozygous intelligent and dull individuals. If this is correct, then not only is a high net fertility of the dull of little lasting importance, but also any eugenic plans for achieving a fairly rapid rise in the average genetic endowment of the population for intelligence will be frustrated by the infertility of the intelligent. In so far as net fertility is under social control it will, however, still be possible to some extent to maintain the average level above that to which it would naturally revert, by measures to raise the net fertility of the intelligent to its maximum and to depress further the fertility of the dull. One might argue that at the moment the reverse process is occurring; from incomplete data it seems that the highest net fertility lies with a group whose intelligence is well below the average.

But before accepting Professor Penrose's thesis, however attractive its theoretical basis, one would like to have the nature of the reduced net fertility of the dull and the intelligent demonstrated. There are figures from America (Indianapolis survey) which imply that differential fertility in relation to economic status depends almost entirely on the relative success with which family size is planned; there was little difference in the degree of fecundity or the size of family desired, but considerable variation in the number of unplanned pregnancies. Obviously psychological factors are responsible for causing social classes 1 and 2 as well as the more intelligent in other social classes in Great Britain to plan the size of their families at well below replacement level, but it seems likely that these psychological factors are determined more by environment than genes. Further, we cannot be sure that these psychological factors are any less strong in the rest of the community until they too are in a position to plan the size of their families effectively. My own guess is that when we have an easy, foolproof method of controlling conception which does not offend religious or æsthetic susceptibilities, the present differential fertility in relation to intelligence will disappear. I do not think that we shall then find either dullards or psychopaths deliberately choosing to have large families and I shall be surprised if there is not ample fecundity available to make it worth while to encourage parents who are likely to produce children well adapted to life in a social democracy, to have large families.—C. O. CARTER, M.R.C.P. (Orpington, Kent.)

The Food We Eat.—There is much to support the suggestion by Dr. Ffrangcon Roberts (Sept. 30) that a change is taking place in our feeding habits which may be having physiological as well as social consequences. Rationing has probably expedited a social trend apparent before the war—nowadays the popularity of snack bars is obvious. Carbohydrate with a relish of some kind unfortunately forms the basis of most snacks; in fact, these are strikingly similar to the meal of the Oriental, whose diet is notoriously deficient in fat and first-class protein—a circumstance believed to exert a profound effect on national vigour.

In days gone by, most artisans started the day with a breakfast in which pork figured largely. The midday meal was usually of the packed variety, and, though simple, was of a nutritional quality now hard to achieve. In the evening a third meal was taken. Today, for breakfast many get hardly anything at all, or hurriedly eat a cereal; little wonder that tea-breaks and other interruptions are frequent. Often these interludes are decried; but probably they reflect an unconscious desire to satisfy physiological demands. Break privileges may be abused and restrictive practices may be in operation; but here I am concerned only with the medical side.

Anyone who has observed, or worked with, men doing continuous work of one kind or another recognises that in recent years, despite a will to work, staying power has deteriorated. In the evening an insidious fatigue seems to bring activites to a close, whereas in the past overtime would willingly have been worked—and sometimes, particularly in rural areas, still is—not necessarily for the pecuniary reward, but for the satisfaction a completed task gives. The extra rations granted to certain manual workers is an official admission that something additional is needed, but somehow in practice the desired end is not achieved. When a man decided for himself the diet which best suited him in his work, he could get it. Popular exhortations to increase production may prove more effective when the protein bait is something more than an extra piece of cheese.—W. R. THROWER, M.R.C.P. (London, W.1.)

Hazards of the Aged Hip.—Your leading article of Sept. 30 draws attention to a matter of increasing importance. At Worcester Royal Infirmary, which serves a population of 150,000, we have in seven years admitted 120–130 of these cases, of which 116 have been treated by open operation and some form of nail or nail-plate. From 1944 to 1949 we averaged about 14 cases a year, but this year we have already operated on 30 in nine months. Every case is considered a justifiable risk for operation unless the patient is moribund after observation for three or four days. While it is agreed that traction alone is suitable for the trochanteric types of fracture, we are driven by shortage of staff and beds to prefer operation in order to ease the nursing of these patients and to get them ambulant on crutches and out of hospital at the earliest possible moment. The average stay in hospital under this régime is about three weeks, and the operative and post-operative mortality is negligible—possibly 1 or 2%. Though accurate figures have not yet been worked out, my impression is that 60–70% of our cervical fractures achieve bony union. Non-union, due to interference with the blood-supply and aseptic necrosis of the head, is an unsolved problem for the remaining 20–30%. For cervical cases with non-union, a McMurray type of osteotomy after removal of the nail gives excellent results, though this condemns the patient to a tedious three months or longer in a plaster spica and adds to the burden of nursing. Trochanteric fractures fixed by a Capener or McKee type of nail-plate seem always to unite quickly.—NORMAN DUGGAN, F.R.C.S. (Worcester Royal Infirmary.)

Theory of Barbiturate Action.—Dr. Dalton's speculation (Oct. 7) is difficult to reconcile with the fact that, with all barbiturates so far tested, anæsthesia results in an *increase* in the acetylcholine content of brain (Tobias, J. M., Lipton, M.A., Lepinat, A. A. *Proc. Soc. exp. Biol., N.Y.* 1946, **61**, 51. Richter, D., Crossland, J. *Amer. J. Physiol.* 1949, **159**, 247. Crossland, J. Unpublished observations). This effect is regarded as secondary to the decrease of nervous activity during anæsthesia, since a similar, though smaller, increase is found during natural sleep (Richter and Crossland 1949). Such a decreased liberation of acetylcholine, rather than reduced synthesis, is the more probable explanation of the finding of Velazques and Elio Membrado that the amount of acetylcholine in the cerebrospinal fluid (C.S.F.) of dogs is reduced during anæsthesia (*Farmacoterap. actual, Madrid*, 1944, **1**, 28). Conversely, the finding by Tower and McEachern (*Canad. J. Res.* 1949, **E27**, 120) that in cases of epilepsy acetylcholine often appears in the C.S.F. in amounts depending on the frequency of the seizures, is likely to be explained by increased release of acetylcholine, since there is little evidence to associate epilepsy with accelerated synthesis of this substance by the brain.—J. CROSSLAND, M.A. (Neuropsychiatric Research Centre, Whitchurch Hospital, Cardiff.)

Enuresis and Hypersomnia.—Dr. Ström-Olsen has suggested (July 22) that in adults enuresis and hypersomnia constitutes a syndrome of central origin; but he hesitates to claim that a similar syndrome is to be found in children (Sept. 30). I have shown that in some cases of enuresis there are uninhibited contractions of the bladder which do not reach consciousness, and which may to some extent be inhibited by drug treatment (*Ann. R. Coll. Surg.* 1949, **5**, 5). Such has been the rationale of treatment with ephedrine and even with belladonna; but perhaps we have too often assumed that any benefit is due to the local action of these substances. In patients benefited by this treatment the structure and function of the bladder are so often normal that the effect is probably due to the drug's stimulating and sleep-diminishing effect. The greatest advance in the treatment of true 'functional" enuresis has been the introduction of 'Dexedrine.' Bearing in mind that one in three cases of enuresis coming to hospital has some organic factor, among the remainder the cure-rate is very high when dexedrine is used in conjunction with ordinary toilet training. Hypersomnia, enuresis, and bad school reports go together and often disappear together.—D. F. ELLISON NASH, F.R.C.S. (London, W.1.)

Tuberculin Surveys.—Dr. Hounslow and Dr. Macdonald have asked, in their letter of Oct. 7, if there can be any advantage "in delaying further a major investigation into the level of tuberculisation of our own population." A large-scale tuberculin survey covering 22 different areas in England and Wales was organised recently by the Medical Research Council with the active coöperation of the staff of many local health authorities and regional hospital boards. Nearly 100,000 children and young people between the ages of 5 and 20 were tuberculin-tested, and the results are at present being analysed.—M. DANIELS, M.R.C.P., secretary, M.R.C. Tuberculin Survey Committee. (Medical Research Council Laboratories, London, N.W.3.)

No Tools.—Under this heading (Sept. 23) you do scant justice to the public-health authorities. At the time of the inauguration of the dispensary scheme the sanatorium alone had proved a failure—and, owing to the adoption of graduated work, a danger. The same could be said of tuberculin treatment. Little or nothing had been said about the value of rest. But in the counties of Rutland and Peterborough the surprising value of rest was made known to the public by the war-cry "take away his trousers and his lungs will look after themselves," and as far back as 1915 this was elaborated by my undertaking artificial-pneumothorax treatment in the patient's home. My first patient lived for over twenty years, the second is still alive, and over 40 were so treated without requiring sanatorium treatment. It goes to prove that elaborate buildings are not needed. It will be years and years before additional sanatoria can be built, and meanwhile a very large proportion of chest cases could be treated in their homes or in open-air shelters adjoining their homes.—CHRISTOPHER ROLLESTON, M.R.C.P. (Ketton, Stamford, Lincs.)

Incidence of Sprue Syndrome.—In collaboration with Dr. J. R. Fountain I published (*Brit. med. J.* 1950, i, 1157) an ætiological study of some 2000 cases of the sprue syndrome (tropical sprue, idiopathic steatorrhœa, and cœliac disease) who received priority rations between 1943 and 1948. We produced evidence that the syndrome might be conditioned by a genetic factor which may be accentuated and brought to light by a variety of environmental agents. The rarity of the syndrome (one case of idiopathic steatorrhœa per 700,000 population over 15 years of age, and one case of cœliac disease per 135,000 population below that age) makes it unlikely that any individual will see sufficient cases to throw additional light on the ætiological importance of the genetic factor. I am therefore appealing to medical men in all parts of the world to help in this investigation by sending me any information regarding two or more cases of the syndrome in a single family. I should also be grateful for information which would help to answer the question: "What happens to children with cœliac disease?"—i.e., what percentage die, recover, or appear in adult life as cases of idiopathic steatorrhœa?—Prof. L. S. P. DAVIDSON, F.R.C.P. (Department of Medicine, University of Edinburgh.)

Status of Tuberculosis Workers.—Workers in tuberculosis will be dismayed by the Ministry of Health's announcement concerning the posts that may suitably be filled by senior hospital medical officers. It appears that, under this ruling, doctors who have specialised for years in this field will very seldom be able to attain consultant rank. In particular those who choose to remain in chest-clinic work are unlikely to be eligible for consultant status. This decision follows discussions with professional bodies, and it is difficult to avoid the conclusion that not only the Ministry of Health itself but also consultants in other branches of medicine are determined to maintain the degraded position of the tuberculosis service. It was hoped that, with the advent of the N.H.S., this position would be radically altered and all doctors who had made a single specialty their life work would be considered on equal terms according to individual merit. Here, however, we have the singling out of a specific branch of medicine (among others, such as geriatrics and infectious diseases) as a specialty in which, whatever one's personal achievement, the likelihood of consultant grading is remote. With the present shortage of beds and the increase in responsibility falling on the chest-clinic physician and his staff, the decision is extremely short-sighted. Tuberculosis today forms the greatest problem facing the health service; but until tuberculosis workers are given the recognition which their work and responsibilities demand, there is little hope of drawing the best men into this work.—PETER STRADLING, M.R.C.P., consultant chest physician, Hammersmith, London.

In England Now

FRIDAY morning used to be one of unalloyed pleasure. I would get up at leisure—my hospital round is later than on other days—and enjoy an idyllic breakfast ploughing steadily through the *Lancet* and the *Times*, with a final glance at the *New Statesman*, as I munched my toast and marmalade. With careful timing I could get down just after the children left for school but before the breakfast things were cleared away. Then all was changed, simply because your newborn contemporary, the *E-gle*, also comes out on Fridays. I tried every expedient, even telling our newsagent to hide it in the bowels of the *Times*, but it was no use, the children always got there first; and they would either whisk the paper off to school, without allowing me so much as a glimpse of Dan Dare, Spaceman of the Future, on Venus, or add insult to injury by shrieking a brief synopsis as they flashed by. Life seemed bleak indeed until I hit on the device of beginning my Friday's round in the children's ward. Every child seems to have a copy, and I can comfortably get through the week's instalment as I pause at each bedside to pass the time of day or palpate an abdomen. I'm afraid the unwonted sparkle in my eye has given me away and my stock has gone down with the nurses, but the few children who have tumbled to it now greet me as one of the Initiated—a fellow space-traveller.

* * *

The vast physiology theatre at the medical school was crammed to the roof for the first meeting, on Oct. 4, of the reconstituted Manchester Medical Society. Mr. Wilson Hey, the president, traced the history of Manchester medical societies from the late 18th century; and the Lord Mayor commented without surprise on the number of occasions that doctors forgathered on licensed premises. As president of the Royal Society of Medicine, Lord Webb-Johnson presented Mr. Hey with a document conveying the society's good wishes; the Vice-Chancellor hoped that the society would help to bridge the growing rift between specialist and general practitioner; Prof. Hilda Lloyd suggested that Manchester had more or less founded the Royal College of Obstetricians and Gynæcologists; and blessings were pronounced by Sir Cecil Wakeley for the Royal College of Surgeons, by Prof. Crighton Bramwell for the Royal College of Physicians, and by the president of the Liverpool Medical Institution.

Over 600 people went to the reception in the Whitworth Art Gallery in the evening. Those of them who hoped that the society would be re-launched with champagne might have thought differently if they had known how hard the treasurer found it to pay for the light refreshments.

* * *

Most of the pituitary glands of American cattle find their way into the processing plants of a great commercial laboratory, whence they emerge in part as A.C.T.H. But I was perturbed to find that this firm seems to claim a controlling interest in the human hormone in vivo; for one of its publications refers to the "alarm reaction" as the sudden and marked endogenous A.C.T.H. (Armour) stimulation of the adrenal gland during environmental stress. Must we pay royalties to the U.S. every time we get into trouble? If so, financial stress will create a vicious spiral.

News

As part of the general settlement of the salaries of hospital nursing and midwifery staff, agreements have been reached by the Nurses and Midwives Whitley Council for revised rates of pay for departmental sisters, superintendent male nurses, night sisters, night superintendents, sister/male tutors, assistant matrons, deputy matrons, and matrons in hospitals other than mental hospitals, mental-deficiency institutions, and maternity hospitals and homes (N.M.C. (50) 8). New rates have also been fixed for superintendent and deputy superintendent nurses (now graded as matrons and assistant matrons) working in National Assistance institutions which have beds for the chronic sick

On Oct. 12 the honorary medal of the Royal College of Surgeons of England was presented to Lord Webb-Johnson for "his many generous acts and continued labours in the interest of the college during his eight years of presidency."

The National University of Ireland has conferred the honorary degree of D.SC. on Dr. Philip S. Hench and Mr. E. C. Kendall, D.SC., of the Mayo Clinic, Rochester, Minnesota, in recognition of their contributions to medical and biochemical research, with particular reference to their work on 'Cortisone.'

Lord Nuffield has been elected president of the British Rheumatic Association.

The Rockefeller Foundation has made grants of over £20,000 for studies in London, Cambridge, and Bristol, in human heredity, anthropology, and anatomy.

Television has been successfully used in Philadelphia for the long-range examination of X-ray films. According to B.U.P., the image is in some respects better than the original.

The annual meeting of the British Orthopædic Association will be held at Friends House, Euston Road, London, N.W.1, on Oct. 26, 27, and 28.

Speaking at the annual conference of the National Smoke Abatement Society, held last month at Margate, Dr. J. S. G. Burnett, M.O.H. for Preston, described instances of increased mortality in this country which had followed smoke fogs. But apart from these periods of limited and heavy pollution there was always some pollution in the air which had harmful effects over long periods. Mr. R. E. Waller, who is working in the pathology department of St. Bartholomew's Hospital, said that examination of town smoke had shown that cancer-promoting substances were always present in trace amounts. Mr. D. T. A. Townend, D.SC., director-general of the British Coal Utilisation Research Association, gave the first lecture named after Dr. H. A. Des Vœux, the founder of the society.

The professional nurses and midwives conference held each year under the auspices of the *Nursing Mirror* will take place from Oct. 23 to 27 at the Seymour Hall, Seymour Place, London, W.1. Viscount Addison will preside and the speakers will include Prof. Hilda Lloyd, F.R.C.O.G., and Sir Cecil Wakeley, F.R.C.S.

A *Handbook for General Medical Practitioners*, which is being issued by the Ministry of Health to doctors on the lists of executive councils, provides comprehensive information about the operation of the N.H.S. as it affects the practitioner.

CORRIGENDUM: *Treatment of Fibrositis with Adrenaline, Ephedrine, and Belladonna Creams.*—In Dr. Howell's article of Sept. 23 (p. 395) the formula for the ephedrine cream should read: Ephedrine hydrochloride 1 part, emulsifying wax 20 parts, wool fat 10 parts, chlorocresol 0·05 part, water *to* 100 parts.

Births, Marriages, and Deaths

BIRTHS

DAVIDSON.—On Sept. 21, at Anstruther, the wife of Dr. W. G. Davidson—a son.

FIGGIS.—On Oct. 9, the wife of Dr. M. M. Figgis—a daughter.

ROBINSON.—On Oct. 13, at Danby, Yorks, the wife of Dr. Robert Robinson—a son.

RODGER.—On Sept. 28, the wife of Dr. D. E. Rodger—a son.

ACADEMIC AND EDUCATIONAL

Empire Rheumatism Council: Post-graduate weekend course at Apothecaries' Hall, Nov. 17–19. Fee 2 gns., with application to Gen. Secretary, Tavistock House (N), Tavistock-square, W.C.1.

Institute of Orthopædics: Course in diagnostic and prognostic methods in orthopædics, Nov. 6–11. Fee 7 gns. Apply Dean, 234, Great Portland-street, W.1.

Institute of Ophthalmology, W.C.1.: Sr. Lecturer in Bacteriology, with experience of virus work (£1250–£100–£1750). Apply to Secretary (closing date Nov. 10).

London University: Research Grants for materials and apparatus. Apply Secretary, Central Research Funds Committee, Senate House, W.C.1, by Nov. 30.

Birmingham University: Chair of Obstetrics and Gynæcology (£2250–£2750; eligible for distinction award). Apply to Secretary (4 weeks).

Glasgow University: Jr. Asst. Department of Midwifery. Apply to Secretary (closing date Nov. 11).

Liverpool University: George Holt Fellowship in Physiology. Gastro-enterology research. Medical and Science graduates apply to Registrar.

Hospital for Sick Children, W.C.1.: Research Fellowship for Pathologists to investigate Malignant Disease in Childhood. Tenable 1 year (£1000). Apply to Morbid Anatomist.

Newcastle upon Tyne R.H.B.: Fellowship for survey of children's accommodation, General, Mental, and Mental-deficiency hospitals (£1300). Apply to S.A.M.O. (28 days).

St. Andrews University: Professor of Surgery, in Senior Medical School, Dundee (£2750). Apply to Secretary (closing date Jan. 15).

LIST OF HOSPITAL VACANCIES

(Further particulars of appointments available on request to Advertisement Manager)

Albert Dock Orth. & Frac., E.16.—Rec. Room O.

Belgrave for Children, S.W.9.—Res. H.O.

Bearstead Mem., N.16.—Res. Obst. M.O. (H.O.); Res. Obst. M.O. (H.O.), Hampton Court.

Brompton, S.W.3.—3 H.P.s (non-res.).

Children's, S.E.26.—Res. M.O. (H.O.).

Hammersmith, West London, & St. Mark's.—Reg. (rheum.).

Hampstead Gen., N.W.3.—H.P.; H.S.; Cas. O.

Hosp. for Sick Child., W.C.1.—Orth. Reg. (part-time), O.P. Dept.

Hosp. of St. John & St. Eliz.—Surg. Reg. (Male).

London, E.1.—Sr. Reg. (thor. surg.).

London, E.1.—Sr. Reg. (obst. & gyn.).

London Clinic, W.1.—Res. H.O. (med.).

Memorial, S.E.18.—H.S. (gen. surg., gyn. & obst.).

Memorial, S.E.18.—H.P.; C.O. (2nd or 3rd post).

Middlesex, W.1.—Reg. (dis. nervous system); Med. Reg.

Mile End, E.1.—Res. Jr. Gyn. & Obst. Reg.

North Middlesex, N.18.—Sr. H.S. (gen. & thor. surg.); H.P.; H. Anæs.

National, for Nervous Diseases, W.C.1.—Asst. Clin. Path. (Sr. Reg.).

Nat. Hosp. Nervous Diseases, W.C.1.—Asst. Reg. (O.P. Dept.), Sr. Reg.

N.E. Met. R.H.B.—Med. Reg. (Whipps Cross); Reg. (path.), N. Middlesex.

N.W. Met. R.H.B.—Reg. (T.B.), Chest Clinic.

N.W. Met. R.H.B.—P.-t. Ophth. Surg. (Royal Northern).

N.W. Met. R.H.B.—Sr. Reg. (Hampstead Chest Clinic).

Paddington, W.9.—Sr. Reg. (med.).

Princess Louise Kensington for Children, W.10.—H.P. (2nd or 3rd post).

Royal Free, W.C.1.—Reg. (Rad. Dept.); Res. Asst. Path. (H.O.).

Royal Masonic, W.6.—Visiting Urological Surg.

Royal Nat. T.N. & E., W.C.1.—R.H.S. (2nd or 3rd post).

Royal Northern, N.7.—2 H.S.s & C.O.s (2nd or 3rd posts).

St. Alfege's, S.E.10.—H.P.

St. Alfege's, S.E.10.—H.O. Obst. (2nd or 3rd post).

St. Charles', W.10.—Reg. (part-time), E.N.T.; Sr. Reg. (part-time), thor.

St. James's, S.W.12.—2 H.S.s (gyn. & obst.); Reg. (phys. med.); Sr. Reg. (obst. & gyn.).

St. Nicholas, S.E.18.—H.P.; H.S. (2nd or 3rd post).

South London for Women & Children, S.W.4.—Gyn. H.S. (Female), 2nd or 3rd post.

University College, W.C.1.—Asst. Rad. (Sr. H.M.O.), Dental Dept.

Whittington, N.19.—Reg. (clin. path.).

Westminster. (All Saints Urol. Centre, S.E.11).—R.S.O. (Jr. Reg.), Male.

Provincial

Ashton, Hyde & Glossop H.M.C.—H.S. (orth.).

Alton, Hants. Lord Mayor Treloar Orth.—Sr. Reg.

Altrincham Gen.—Asst. R.S.O. (2nd or 3rd post).

Aylesbury. Royal Bucks.—H.S. (E.N.T. & ophth.).

Aylesbury & Dist. H.M.C.—H.P. (pæd.).

Bath. Royal United.—H.S. (gyn. & obst.); House Anæs.

Bath. St. Martin's.—H.P.

Barnsley. Beckett.—Cas. O.; H.S. (Special).

Birmingham. Queen Elizabeth.—R.M.O. (Jr. Reg. or Reg.).

Birmingham United.—Reg. or Sr. Reg. (psych.).

Birmingham. Rubery Hill.—H.P. (3rd post).

Birmingham. Hollymoor.—H.P. (3rd post).

Birmingham. Sorrento & Lordswood Maty.—Obst. H.S. (2nd or 3rd post).

Birmingham. Canwell Hall Babies.—H.P. (2nd or 3rd post).

Birmingham Accid. & Rehab. Centre.—H.S.

Bradford Royal Infy.—H.S. (thor. surg.).

Bradford. Royal Infy.—H.S.

Bradford. St. Luke's.—H.O. (anæs.).

Brighton. Royal Alexandra for Sick Children.—H.P.

Brighton & Lewes H.M.C.—Sr. Reg. (orth. surg.); Jr. Reg. (orth. surg.).

Braintree. Black Notley.—Orth. H.O.

Bromsgrove. Barnsley Hall.—Jr. Reg.

Bromley Group H.M.C.—Sr. Reg. (pæd.).

Bristol. Charterhouse-on-Mendip San.—Jr. H.O.

Bristol. Ham Green Hosp. & San.—Jr. H.O.

Bury Gen.—Cas. O.; H.S.

Bridgend. Morgannwg Mental.—Jr. H.M.O.

Bournemouth. Royal Victoria.—H.P.

Bournemouth. Royal Victoria.—H.S. (ophth. & E.N.T.).

Bowdon, Ches. Manchester Throat & Chest.—Jr. E.N.T. Reg.; H.O.

Coventry & Warwick.—H.P.

Chichester. Royal W. Sussex.—H.S. (1st or 2nd post).

Chertsey. St. Peter's.—Res. H.S. for Gyn. & Special Depts.

Cardiff. Whitchurch.—H.P.s.
Chesterfield & North Derbyshire Royal.—H.O. (cas.).
Carmarthen. West Wales Gen.—H.S.; R.S.O.
Chelmsford. Broomfield.—Med. Reg.
Chelmsford. St. John's.—Obst. H.S.
Chelmsford & Essex & St. John's.—H.S. (Spec. Depts.).
Canterbury. Kent & Canterbury.—H.S. (E.N.T. & E.).
Chester. Royal Infy.—Jr. Reg. (anæs.).
Chester. Royal Infy.—M.O. (Jr. H.M.O.), orth. & cas.
Chorley & Dist.—H.S.
Dewsbury Gen.—H.O. (derm.).
Davyhulme. Park.—H.O. (Reg.), Non-T.B. Thoracic Surg. Centre.
Derby. Pastures.—Jr. H.M.O.
Dundee Dist. & Royal Mental.—Jr. H.M.O.
Darlington Mem.—E.N.T. Reg.
Doncaster Royal Infy.—H.S. (E.N.T. & ophth.); H.S.
Exeter. Royal Devon & Exeter.—2nd H.P.
Eye, Suffolk. Hartismere.—Jr. H.M.O.
Farnborough, Kent.—H.P. (pæd.); H.S.
Farnham, Surrey.—Asst. Obst. O. (H.O.).
Great Yarmouth & Gorleston Gen.—H.S.
Griffithstown, Mon. County.—Jr. H.M.O. (orth.).
Grimsby Gen.—Res. Anæs. (Jr. H.M.O.).
Guildford. Royal Surrey Cty.—H.S. (orth. & traum.).
Huddersfield Royal Infy.—Rad. Reg.; E.N.T. Reg. (Jr. Reg.).
Hexham Gen.—Jr. Orth. Reg.; Jr. Reg. (gen. surg.).
Hereford Gen.—H.S. (2nd post), cas., E.N.T., & frac.
Haverfordwest. Pembroke County War Mem.—R.S.O.; H.S.
Halifax Gen.—H.S.
Halifax. Gen.—Jr. Obst. Reg.
Halifax Royal Infy.—1st H.S. (2nd or 3rd post); Jr. Reg. (cas. & orth.).
Halifax. St. John's.—H.P.
Hounslow, Middx.—H.S. (cas. anæs., &c.); H.P.
Harrogate. Royal Bath & Rawson Conval. Wing.—R.M.O. (2nd or 3rd post.)
Hertford County.—H.P. (2nd or 3rd post), Male.
Hull. Royal Infy.—H.S. (E.N.T.); Orth. H.S.
Hull. Royal Infy.—H.S.
Hull. Victoria for Sick Children.—H.P.
Ilford. King George.—H.P.; H.S.
Ipswich. Borough Gen.—H.S. (gen. surg.).
Ipswich. E. Suffolk & Ipswich.—H.S. (gen. surg.); H.S. (orth. & frac.); H.S. (E.N.T., ophth.); C.O. & Asst. H.P.
Isleworth. W. Middlesex.—Sr. Reg. (anæs.).
Kettering Gen.—H.S. (traum. & orth.).
Leamington. Warneford Gen.—H.P.
Leamington Spa. Warneford Gen.—R.H.S. (E.N.T. & ophth.), 2nd or 3rd post.
Leeds. United & University.—Sr. Reg. and Tutor Orth. Surg.
Leeds. United Hosp.s & University.—Sr. Reg. & Tutor (Dept. Med.).
Leeds. Gen. Infy.—Reg. or Sr. Reg. (anæs.); Reg. & Sr. Reg. (National Radioth. Centre); Reg. or Sr. Reg. (surg.); Reg. (Male), E.N.T.
Leeds R.H.B.—Reg. (gen. surg.), Halifax.
Leeds R.H.B.—Asst. Phys. I.D (Sr. H.M.O.).
Leeds R.H.B.—Cons. Anæs.s (Huddersfield) (Bradford) (Hull).
Leeds. Menston.—Jr. Reg.s (psych.).
Lincoln. County.—H.O. (orth. & frac.).
Lowestoft & N. Suffolk.—H.S.
Malvern. St. Wulstan's.—Jr. H.M.O. (San. & Thor. Unit).
Manchester. Crumpsall.—Jr. Reg. (med.).
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Newcastle upon Tyne R.H.B.—Cons. Asst. Chest Phys. (Hartlepool & Stockton).
Newcastle upon Tyne R.H.B.—Asst. Ophth. (Sr. H.M.O.), Tees-side.
N.W. Met. R.H.B.—Sr. Reg. or Reg. (Harperbury Mental).
N.W. Met. R.H.B.—Surg. Reg. (Shrodells); Sr. Anæs. Reg. (Peace Mem. & Shrodells).
N.E. Met. R.H.B.—Sr. Reg. (Research Fellow), psych. Runwell Mental; Sr. Surg. Reg. (Chase Farm); Reg. (cas. & admiss.), Oldchurch.
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Nuneaton. Manor.—H.S. (gen. surg. & cas.).
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